## SEQUENCE LISTING

<110> DIVERSA CORPORATION Murphy, Dennis Ried, John

<120> ENZYMES HAVING ALPHA-GALACTOSIDASE ACTIVITY AND METHODS OF USE THEREOF

<130> DIVER1120-4

<140> 09/886,400

<141> 2001-06-20

<150> 09/619,032

<151> 2000-07-19

<150> 09/407,806

<151> 1999-09-20

<150> 08/613,220

<151> 1996-03-08

<160> 4

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<212> DNA

<213> Artificial Sequence

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<223> polynucleotide probe

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<212> DNA

<213> Thernococcus alcaliphilus

<220>

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48

52

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gag Glu	aca Thr	ctg Leu 35	att Ile	aaa Lys	gaa Glu	gaa Glu	att Ile 40	cct Pro	ttt Phe	ggg Gly	ctc Leu	aac Asn 45	ata Ile	acg Thr	ggc Gly	144
tat Tyr	acc Thr 50	tta Leu	aag Lys	ttc Phe	ctc Leu	ccg Pro 55	aag Lys	gat Asp	att Ile	ata Ile	gac Asp 60	ctc Leu	gtt Val	aaa Lys	Gly 999	192
ggc Gly 65	atc Ile	gcg Ala	agt Ser	gac Asp	ctg Leu 70	ata Ile	gag Glu	ata Ile	atc Ile	gga Gly 75	acg Thr	agc Ser	tac Tyr	acg Thr	cac His 80	240
gca Ala	ata Ile	ctc Leu	ccc Pro	ctc Leu 85	ctc Leu	ccg Pro	ctt Leu	agc Ser	aga Arg 90	gta Val	gaa Glu	gca Ala	caa Gln	gtt Val 95	cag Gln	288
aga Arg	gat Asp	agg Arg	gaa Glu 100	gtt Val	aag Lys	gaa Glu	gag Glu	ctc Leu 105	ttc Phe	gag Glu	ctt Leu	tct Ser	cca Pro 110	aag Lys	gga Gly	336
ttc Phe	tgg Trp	ctg Leu 115	Pro	gag Glu	ctc Leu	gcc Ala	tat Tyr 120	gac Asp	ccg Pro	ata Ile	atc Ile	cct Pro 125	gcc Ala	ata Ile	ctg Leu	384
aag Lys	gac Asp 130	Asn	ggt Gly	tat Tyr	gag Glu	tat Tyr 135	cta Leu	ttc Phe	gcc Ala	gac Asp	999 Gly 140	gag Glu	gcg Ala	atg Met	ctt Leu	432
ttc Phe 145	Ser	gct Ala	cat His	ctc Leu	aac Asn 150	tcg Ser	gcg Ala	ata Ile	aag Lys	cca Pro 155	Ile	aaa Lys	ccg Pro	ctc Leu	tat Tyr 160	480
cca Pro	cac His	ctt Leu	ata Ile	aag Lys 165	gcc Ala	caa Gln	agg Arg	Glu	aag Lys 170	Arg	ttt Phe	agg Arg	tac Tyr	atc Ile 175	ser	528
tat Tyr	ctc Leu	ctt Leu	ggt Gly 180	Leu	agg Arg	gag Glu	ctt Leu	agg Arg 185	Lys	gcg Ala	g ata i Ile	aag Lys	ctc Leu 190	. vaı	ttt Phe	576
gaa Glu	ggt Gly	aag Lys 195	val	acg Thr	cta Leu	aag Lys	gca Ala 200	ı Val	aaa . Lys	gac Asp	ato Ile	gaa Glu 205	ı Ala	gta Val	Pro	624
gtt Val	tgc Trp 210	val	g gco L Ala	gtg Val	aac Asn	acg Thr 215	Ala	gta Val	ato Met	g cto Lei	ggc 1 Gly 220	7 I16	gga Gly	agg Arg	ctt Leu	672
cct Pro 225	Let	ato 1 Mei	g aat E Asi	cct n Pro	aac Lys 230	. Lys	gtg Val	g gcg	g ago a Sei	tgg Trp 23!	o TTE	a gaq e Gli	g gad ı Asp	aag Lys	gac Asp 240	720
aac Asi	att	c cti	t cta u Lei	a tac ı Tyı	ggc Gly	acc Thr	gat Asp	ata p Ile	a gaq e Glu	g tto ı Pho	c att	gg Gl	c tat y Tyi	agg Arg	g gac g Asp	768

245 250 255

att Ile	gca Ala	ggc Gly	tac Tyr 260	aga Arg	atg Met	agt Ser	gtt Val	gag Glu 265	gga Gly	tta Leu	tta Leu	gag Glu	gtt Val 270	ata Ile	gac Asp	81	16
gag Glu	ctc Leu	aac Asn 275	tcg Ser	gaa Glu	ctg Leu	tgc Cys	ctt Leu 280	ccc Pro	tca Ser	gag Glu	ctg Leu	aag Lys 285	cac His	agt Ser	gga Glý	86	54
agg Arg	gag Glu 290	ctc Leu	tac Tyr	tta Leu	cgg Arg	act Thr 295	tcg Ser	agt Ser	tgg Trp	gca Ala	cca Pro 300	gat Asp	aag Lys	agc Ser	ttg Leu	91	12
agg Arg 305	ata Ile	tgg Trp	aga Arg	gag Glu	gac Asp 310	gaa Glu	Gly ggg	aac Asn	gca Ala	aga Arg 315	ctt Leu	aat Asn	atg Met	ctg Leu	tcc Ser 320	96	60
tac Tyr	aat Asn	atg Met	agg Arg	ggc Gly 325	gaa Glu	ctc Leu	gcc Ala	ctt Leu	tta Leu 330	gcc Ala	gag Glu	aac Asn	agc Ser	gat Asp 335	gca Ala	100	08
agg Arg	gga Gly	tgg Trp	gag Glu 340	ccc Pro	ctc Leu	cct Pro	gag Glu	agg Arg 345	agg Arg	ctg Leu	gat Asp	gcc Ala	ttc Phe 350	cgg Arg	gcg Ala	10	56
ata Ile	tat Tyr	aac Asn 355	Asp	tgg Trp	agg Arg	ggt Gly	gaa Glu 360	aat Asn	glà aaa	gaa Glu	cct Pro	tag				10	95

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<212> PRT

<213> Thermococcus alcaliphilus

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Glu Gly Lys Val Thr Leu Lys Ala Val Lys Asp Ile Glu Ala Val Pro Val Trp Val Ala Val Asn Thr Ala Val Met Leu Gly Ile Gly Arg Leu Pro Leu Met Asn Pro Lys Lys Val Ala Ser Trp Ile Glu Asp Lys Asp Asn Ile Leu Leu Tyr Gly Thr Asp Ile Glu Phe Ile Gly Tyr Arg Asp Ile Ala Gly Tyr Arg Met Ser Val Glu Gly Leu Leu Glu Val Ile Asp Glu Leu Asn Ser Glu Leu Cys Leu Pro Ser Glu Leu Lys His Ser Gly Arg Glu Leu Tyr Leu Arg Thr Ser Ser Trp Ala Pro Asp Lys Ser Leu Arg Ile Trp Arg Glu Asp Glu Gly Asn Ala Arg Leu Asn Met Leu Ser Tyr Asn Met Arg Gly Glu Leu Ala Leu Leu Ala Glu Asn Ser Asp Ala Arg Gly Trp Glu Pro Leu Pro Glu Arg Arg Leu Asp Ala Phe Arg Ala Ile Tyr Asn Asp Trp Arg Gly Glu Asn Gly Glu Pro